CLAIMS APPENDIX

For the convenience of the Examiner, all the pending claims in their current form are presented here:

1.    (unchanged; previously twice amended)  A system for controlling a manufacturing production line using a virtual kanban system and a manufacturing execution system comprising:

said manufacturing execution system for automatically controlling routing of product lots and production inputs in said manufacturing production line based on a production scheduling model, wherein feedback data from said production line is provided to said manufacturing execution system;

a database for storing said model and said feedback data, wherein said feedback data is used to provide values for variables of said model; and

a simulating system for simulating operation of said production line according to said model, said simulating system using said feedback data from said database in performing said simulation, said simulating system further comprising a user interface through which changes to said model can be made;

wherein said manufacturing execution system monitors consumption of said production inputs and orders additional

production inputs using electronic kanbans which are cycled in response to said feedback data.


4.    (unchanged)    The system of claim 1, further comprising a plurality of input stations located along said production line, wherein each of said input stations provides a user with access to said model in said database and allows said user to override said model and input instructions to said manufacturing execution system.


5.    (unchanged)    The system of claim 1, wherein said feedback data is divided into two sets of data received by said manufacturing execution system in separate transmissions of said feedback data,

wherein a first of said two sets of data comprises data specifying a type of equipment in said production line; and

wherein a second of said two sets of data comprises data specifying an operating status of said equipment, status of said product lots and status of said production inputs.


6.    (once amended; rewritten as an independent claim)

[The system of claim 5,]    A system for controlling a

manufacturing production line using a virtual kanban system
and a manufacturing execution system comprising:

said manufacturing execution system for automatically
controlling routing of product lots and production inputs in
said manufacturing production line based on a production
scheduling model, wherein feedback data from said production
line is provided to said manufacturing execution system;

a database for storing said model and said feedback data,
wherein said feedback data is used to provide values for
variables of said model; and

a simulating system for simulating operation of said
production line according to said model, said simulating
system using said feedback data from said database in
performing said simulation, said simulating system further
comprising a user interface through which changes to said
model can be made;

wherein said manufacturing execution system monitors
consumption of said production inputs and orders additional
production inputs using electronic kanbans which are cycled in
response to said feedback data;

wherein said feedback data is divided into two sets of
data received by said manufacturing execution system in
separate transmissions of said feedback data;

wherein a first of said two sets of data comprises data specifying a type of equipment in said production line;

wherein a second of said two sets of data comprises data specifying an operating status of said equipment, status of said product lots and status of said production inputs; and

wherein said manufacturing execution system rechecks a routing schedule for said production inputs and said product lots each time a transmission of said second set of feedback data is received.

7. (unchanged)  The system of claim 5, wherein said manufacturing execution system determines a capacity of said equipment in said production line based on said first set of feedback data and generates routes for said product lots in accordance therewith.

8. (once amended; rewritten as an independent claim)

[The system of claim 7,] A system for controlling a manufacturing production line using a virtual kanban system and a manufacturing execution system comprising:

said manufacturing execution system for automatically controlling routing of product lots and production inputs in said manufacturing production line based on a production

scheduling model, wherein feedback data from said production line is provided to said manufacturing execution system;

a database for storing said model and said feedback data, wherein said feedback data is used to provide values for variables of said model; and

a simulating system for simulating operation of said production line according to said model, said simulating system using said feedback data from said database in performing said simulation, said simulating system further comprising a user interface through which changes to said model can be made;

wherein said manufacturing execution system monitors consumption of said production inputs and orders additional production inputs using electronic kanbans which are cycled in response to said feedback data;

wherein said manufacturing execution system also determines a capacity of said equipment in said production line based on said feedback data and generates routes for said product lots in accordance therewith; and

wherein said manufacturing execution system scans generated routes for equipment in said production line without a determined capacity to determine potential problem areas in said generated routes.

9.    (unchanged)    The system of claim 1, wherein said system records a history of changes in said feedback data for use by a user in upgrading said model.

10.    (unchanged)    The system of claim 1, wherein said manufacturing execution system generates a kanban parameter for each piece of said equipment in said production line which uses a production input.

11.    (once amended; rewritten as an independent claim)
[The system of claim 10,]  A system for controlling a manufacturing production line using a virtual kanban system and a manufacturing execution system comprising:
said manufacturing execution system for automatically controlling routing of product lots and production inputs in said manufacturing production line based on a production scheduling model, wherein feedback data from said production line is provided to said manufacturing execution system;
a database for storing said model and said feedback data, wherein said feedback data is used to provide values for variables of said model; and

a simulating system for simulating operation of said production line according to said model, said simulating system using said feedback data from said database in performing said simulation, said simulating system further comprising a user interface through which changes to said model can be made;

wherein said manufacturing execution system monitors consumption of said production inputs and orders additional production inputs using electronic kanbans which are cycled in response to said feedback data;

wherein said manufacturing execution system generates a kanban parameter for each piece of said equipment in said production line which uses a production input; and

wherein said manufacturing execution system generates proposed kanban stages within said production line defined in accordance with said kanban parameters.


12. (unchanged)   The system of claim 11, wherein said manufacturing execution system uses said kanban parameter for a piece of equipment in operating two or more production input and product lot routes which each include that piece of equipment.

13.  (unchanged)   The system of claim 1, wherein said production line produces semiconductor devices.

14.  (unchanged)  A system for controlling a manufacturing production line using a virtual kanban system and a manufacturing execution control means comprising:

said manufacturing execution control means for automatically controlling routing of product lots and production inputs in said manufacturing production line based on a production scheduling model, wherein feedback data from said production line is provided to said manufacturing execution control means;

database means for storing said model and said feedback data, wherein said feedback data is used to provide values for variables of said model; and

simulating means for simulating operation of said production line according to said model, said simulating means using said feedback data from said database means in performing said simulation, said simulating means further comprising a user interface means through which changes to said model can be made;

wherein said manufacturing execution control means monitor consumption of said production inputs and order additional

production inputs using electronic kanbans which are cycled in response to said feedback data.

15.    (unchanged)    The system of claim 14, further comprising a plurality of input stations located along said production line, wherein each of said input stations provides a user with access to said model in said database means and allows said user to override said model and input instructions to said manufacturing execution control means.

16.    (unchanged)    The system of claim 14, wherein said feedback data is divided into two sets of data received by said manufacturing execution control means in separate transmissions of said feedback data,

wherein a first of said two sets of data comprises data specifying a type of equipment in said production line; and

wherein a second of said two sets of data comprises data specifying an operating status of said equipment, status of said product lots and status of said production inputs.

17.    (once amended; rewritten as an independent claim) [The system of claim 16,] A system for controlling a

manufacturing production line using a virtual kanban system
and a manufacturing execution control means comprising:

said manufacturing execution control means for
automatically controlling routing of product lots and
production inputs in said manufacturing production line based
on a production scheduling model, wherein feedback data from
said production line is provided to said manufacturing
execution control means;

database means for storing said model and said feedback
data, wherein said feedback data is used to provide values for
variables of said model; and

simulating means for simulating operation of said
production line according to said model, said simulating means
using said feedback data from said database means in
performing said simulation, said simulating means further
comprising a user interface means through which changes to
said model can be made;

wherein said manufacturing execution control means monitor
consumption of said production inputs and order additional
production inputs using electronic kanbans which are cycled in
response to said feedback data; and

wherein said manufacturing execution control means
rechecks a routing schedule for said production inputs and

28

said product lots each time a transmission [of said second
set] of feedback data is received specifying an operating
status of said equipment, status of said product lots and
status of said production inputs.

18.  (unchanged)    The system of claim 16, wherein said
manufacturing execution control means determines a capacity of
said equipment in said production line based on said first set
of feedback data and generates routes for said product lots in
accordance therewith.

19.  (once amended; rewritten as an independent claim)

[The system of claim 18,]  A system for controlling a
manufacturing production line using a virtual kanban system
and a manufacturing execution control means comprising:

said manufacturing execution control means for
automatically controlling routing of product lots and
production inputs in said manufacturing production line based
on a production scheduling model, wherein feedback data from
said production line is provided to said manufacturing
execution control means;

database means for storing said model and said feedback

data, wherein said feedback data is used to provide values for

variables of said model; and

simulating means for simulating operation of said

production line according to said model, said simulating means

using said feedback data from said database means in

performing said simulation, said simulating means further

comprising a user interface means through which changes to

said model can be made;

wherein said manufacturing execution control means monitor

consumption of said production inputs and order additional

production inputs using electronic kanbans which are cycled in

response to said feedback data;

wherein said manufacturing execution control means

determines a capacity of said equipment in said production

line based on said feedback data and generates routes for said

product lots in accordance therewith; and

wherein said manufacturing execution control means scans

generated routes for equipment in said production line without

a determined capacity to determine potential problem areas in

said generated routes.

20.    (unchanged)    The system of claim 14, wherein said system records a history of changes in said feedback data for use by a user in upgrading said model.

21.    (unchanged)    The system of claim 14, wherein said manufacturing execution control means generates a kanban parameter for each piece of said equipment in said production line which uses a production input.

22.    (once amended; rewritten as an independent claim)

[The system of claim 21,]    A system for controlling a manufacturing production line using a virtual kanban system and a manufacturing execution control means comprising:

said manufacturing execution control means for automatically controlling routing of product lots and production inputs in said manufacturing production line based on a production scheduling model, wherein feedback data from said production line is provided to said manufacturing execution control means;

database means for storing said model and said feedback data, wherein said feedback data is used to provide values for variables of said model; and

simulating means for simulating operation of said
production line according to said model, said simulating means
using said feedback data from said database means in
performing said simulation, said simulating means further
comprising a user interface means through which changes to
said model can be made;

wherein said manufacturing execution control means monitor
consumption of said production inputs and order additional
production inputs using electronic kanbans which are cycled in
response to said feedback data; and

wherein said manufacturing execution control means
generates a kanban parameter for each piece of said equipment
in said production line which uses a production input; and

wherein said manufacturing execution control means
generate proposed kanban stages within said production line
defined in accordance with said kanban parameters.


23.    (unchanged)    The system of claim 21, wherein said
manufacturing execution control means use said kanban
parameter for a piece of equipment in operating two or more
production input and product lot routes which each include
that piece of equipment.

24.    (unchanged)      The system of claim 14, wherein said production line produces semiconductor devices.

25.    (unchanged)      A method for controlling a manufacturing production line using a virtual kanban system, the method comprising:

automatically controlling routing of product lots and production inputs in said manufacturing production line with a manufacturing execution system using a production scheduling model, wherein feedback data from said production line is provided to said manufacturing execution system;

storing said model and said feedback data in a database, wherein said feedback data is used to provide values for variables of said model;

simulating operation of said production line according to said model with a simulating system, said simulating system using said feedback data from said database in performing said simulation; and

monitoring consumption of said production inputs with said manufacturing execution system and ordering additional production inputs using electronic kanbans which are cycled in response to said feedback data.

26.  (unchanged)   The method of claim 25, further comprising entering changes to said model through a user input device.

27.  (unchanged)   The method of claim 25, further comprising overriding said model and inputting instructions to said manufacturing execution system with a plurality of input stations located along said production line.

28.  (unchanged)   The method of claim 25, further comprising:

dividing said feedback data into two sets of data; and

transmitting said two sets of data to said manufacturing execution system in separate transmissions;

wherein a first of said two sets of data comprises data specifying a type of equipment in said production line; and

wherein a second of said two sets of data comprises data specifying an operating status of said equipment, status of said product lots and status of said production inputs.

29.  (once amended; rewritten as an independent claim)

[The method of claim 28,]  A method for controlling a

manufacturing production line using a virtual kanban system, the method comprising:

automatically controlling routing of product lots and production inputs in said manufacturing production line with a manufacturing execution system using a production scheduling model, wherein feedback data from said production line is provided to said manufacturing execution system;

storing said model and said feedback data in a database, wherein said feedback data is used to provide values for variables of said model;

simulating operation of said production line according to said model with a simulating system, said simulating system using said feedback data from said database in performing said simulation;

monitoring consumption of said production inputs with said manufacturing execution system and ordering additional production inputs using electronic kanbans which are cycled in response to said feedback data; and

[further comprising] rechecking a routing schedule for said production inputs and said product lots each time a transmission of said [second set of] feedback data is received specifying an operating status of said equipment, status of said product lots and status of said production inputs.

30.   (unchanged)    The method of claim 28, further
comprising determining a capacity of said equipment in said
production line based on said first set of feedback data and
generating routes for said product lots in accordance
therewith.

31.   (once amended; rewritten as an independent claim)

[The method of claim 30, further comprising]  A method for
controlling a manufacturing production line using a virtual
kanban system, the method comprising:

automatically controlling routing of product lots and
production inputs in said manufacturing production line with a
manufacturing execution system using a production scheduling
model, wherein feedback data from said production line is
provided to said manufacturing execution system;

storing said model and said feedback data in a database,
wherein said feedback data is used to provide values for
variables of said model;

simulating operation of said production line according to
said model with a simulating system, said simulating system
using said feedback data from said database in performing said
simulation;

monitoring consumption of said production inputs with said

manufacturing execution system and ordering additional

production inputs using electronic kanbans which are cycled in

response to said feedback data;

determining a capacity of said equipment in said

production line based on said feedback data and generating

routes for said product lots in accordance therewith; and

scanning generated routes for equipment in said production

line without a determined capacity to determine potential

problem areas in said generated routes.


32.   (unchanged)    The method of claim 25, further

comprising recording a history of changes in said feedback

data for use by a user in upgrading said model.


33.   (unchanged)    The method of claim 25, further

comprising generating a kanban parameter with said

manufacturing execution system for each piece of equipment in

said production line which uses a production input.


34.   (once amended; rewritten as an independent claim)

[The method of claim 33, further comprising]   A method for

controlling a manufacturing production line using a virtual kanban system, the method comprising:

automatically controlling routing of product lots and production inputs in said manufacturing production line with a manufacturing execution system using a production scheduling model, wherein feedback data from said production line is provided to said manufacturing execution system;

storing said model and said feedback data in a database, wherein said feedback data is used to provide values for variables of said model;

simulating operation of said production line according to said model with a simulating system, said simulating system using said feedback data from said database in performing said simulation;

monitoring consumption of said production inputs with said manufacturing execution system and ordering additional production inputs using electronic kanbans which are cycled in response to said feedback data;

generating a kanban parameter with said manufacturing execution system for each piece of equipment in said production line which uses a production input; and

generating proposed kanban stages within said production line in accordance with said kanban parameters.

35. (unchanged)     The method of claim 33, further comprising using at least one of said generated kanban parameters for a piece of equipment to operate two or more production input and product lot routes which each include that piece of equipment.

36. (unchanged)     The method of claim 25, further comprising manufacturing semiconductor devices with said production line.

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